

U. S. DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

FIELD NOTES

FORAGE CROP INVESTIGATIONS

METHODS OF FAT DETERMINATION

Treat 5 g. of the sample in a loosely stoppered 200 cc. Erlenmeyer flask with a mixture of 10 cc. of alcohol (95%), 2 cc. of concentrated ammonium hydroxid, and 3 cc. of water, keeping the contents of the flask at the boiling point for 2 minutes, preferably on the steam bath. After cooling, extract the contents of the flask with 3 successive 25 cc. portions of ethyl ether, mixing and tamping the material thoroly each time with a glass rod flattened at the end and pouring the extracts off by decantation into a 250 cc. beaker. The last 25 cc. portion of ether should be drained out as completely as possible, after which another 15 cc. portion of the same ammoniacal alcohol solution is added to the flask and the matted material disintegrated as thoroly as possible by means of the flattened glass rod which may be left in the flask for this purpose. The flask is then returned to the steam bath and the entire procedure repeated, the second set of ether extracts being poured into the beaker containing the first set. The second treatment with the ammoniacal alcohol mixture should be more gradual and somewhat longer than the first, so that the ether remaining in the flask may be evaporated off and the ammoniacal alcohol brought to the required boiling point without results disastrous to the determination.

Evaporate the combined extracts to dryness on the steam bath and extract the fat from the residue left in the beaker with successive portions (5 or 6 treatments, using about 15 cc. each time) of a mixture of equal volumes of ethyl ether and petroleum ether. Collect the extracts in a tared platinum dish (do not try to filter), and evaporate to dryness on the steam bath. Dry the residue in a water-jacketed oven at the temperature of boiling water for 30 - 45 minutes, cool in a desiccator, and weigh.

-nialnoo takned ent otul beynoq gniel atpoxke rehto to see brooes
laseinomea ent dliw fremstwey brooes ent . ten taxli ent gni
nialt regnoel tawwomea hne lannabaxg exom ed blionia ewixim lonoolie
-gawo ed yam kalli ent ni gniinimea rehto ent tant os , taxli ent
betripet ent ot tignord lonoolie laseinomea ent hne pro beteto
 . poltenimreketb ent ot enortseailb atlowet tounliw thioq gniilod

maete ent no asenryb ot adoeetxe beunidmoos ent etaxogaw
dliw takned ent ni dliel enbilee ent mozi tak ent toetaxe hne dtrud
nose . os el thooe gniel . atpoxtaxe 3 to d) anolthoq ewisawoos
nneforied hne rehto lynte to asenryb lanne to etwixim a to (emit
ton ob) dalt munitalq betet a ni ataxtaxe ent toelod . rehto
yrg . niald maete ent no asenryb ot etaxogaw hne . (xetlly ot yrg
guilled to etwixogmet ent ta newo betakel-rotaw a ni enbilee ent
 . dliaw hne . totawoieab a ni loos . setunim dā - Os tot totaw

FIELD NOTES.

INSTRUCTIONS.

In case of a series of row or plat tests it is desirable to have all the constant conditions recorded for future reference. This can be done on the blank pages in the front of the book for all points not covered by the topic headings. In case several sets of experiments are recorded in a single book the conditions governing each may be given by filling in the outlines provided. (See pp. 7-11.) The blank pages may be used for any additional data which seem desirable, such as the high, low, and mean temperatures, rainfall, and date of the last killing frost in the spring and of the first killing frost in the fall. At the back of the book are blank pages for convenience in making field calculations and temporary notations. Row numbers should be listed in the order that they occur in the field. Records should be made in rate per cent wherever possible and in such manner that the better the variety or strain the higher the percentage recorded. Rules given under "Explanation of headings and abbreviations used in taking field notes in forage-crop investigations" should be followed, in order that the notes on any given crop may be uniform for all the stations.

EXPLANATION OF HEADINGS AND ABBREVIATIONS USED IN TAKING FIELD NOTES IN FORAGE-CROP INVESTIGATIONS.

SIZE OF PLAT.—Stated in fractions of an acre, as $\frac{1}{5}$, $\frac{1}{10}$, etc., or, if nursery rows, length of the row in feet.

RATE OF SEEDING.—Pounds per acre.

STAND.—Given in percentages or number of plants in the row.

DATE.—Given in figures, as 9-15 (September 15).

UNIFORMITY.—Given in percentages.

VIGOR.—Strength or abundance of growth: *p*=poor; *f*=fair; *g*=good; *ex*=excellent.

CONDITION.—If the crop is biennial or perennial, give percentages showing what portion has survived the winter.

FOLIAGE COLOR.—Indicate the shade of green as follows: *g*=green; *l g*=light green; *d g*=dark green; *y g*=yellowish green; *g g*=grayish green; *p g*=purplish green. The superlative degree of any of these colors may be indicated by placing *v* before the color abbreviations, as follows: *v l g*=very light green.

HABIT OF GROWTH.—Described by the following terms: *e*=erect; *s e*=suberect; *d*=decumbent (prostrate, tip ascending); *p*=procumbent (trailing); *v*=vining; *b*=bushy.

STEMS PER PLANT.—Average number of stems produced from one seed, as 7-8.

MEASUREMENTS.—Given in inches unless otherwise indicated.

DISEASE RESISTANCE.—Give the percentage of noninfection; best determined by estimating the percentage of infection and subtracting this from 100.

DROUGHT RESISTANCE.—Indicate the comparative vigor of plants under conditions of drought, as follows: *p*=poor; *f*=fair; *g*=good; *ex*=excellent.

LODGING.—Described as *none*, *little*, *medium*, *much*.

SHATTERING.—Described as *none*, *little*, *medium*, *much*.

QUALITY.—Indicated as follows: *p*=poor; *f*=fair; *g*=good; *ex*=excellent.

ABBREVIATIONS.

GENERAL.—*v*=very; *med*=medium; *p*=poor; *g*=good; *ex*=excellent (indicates an unusually high degree, seldom occurring); *l*=little; *m*=much; *o*=none or nothing; *lg*=long; *s*=short; *sm*=small; *lrg*=large; *ab*=abundant; *few*=few; *cs*=coarse; *sl*=slender.

COLOR.—*v*=violet; *i*=indigo; *b*=blue; *g*=green; *y*=yellow; *o*=orange; *r*=red; *pur*=purple; *pk*=pink; *l*=light (used before a color); *d*=dark (used before a color).

SHAPE.—*ov*=oval; *rd*=round; *obl*=oblong; *lin*=linear; *obo*=obovate; *cor*=cordate; *cyl*=cylindrical; *elip*=elliptical.

----- *Test of* -----, 19-----

Object-----

Location-----

Kind of soil-----

Character of field-----

Previous crop-----

Preparation of seed bed-----

1. -----

2. -----

3. -----

4. -----

5. -----

6. -----

Seeding method-----

----- *Test of* -----, 19-----

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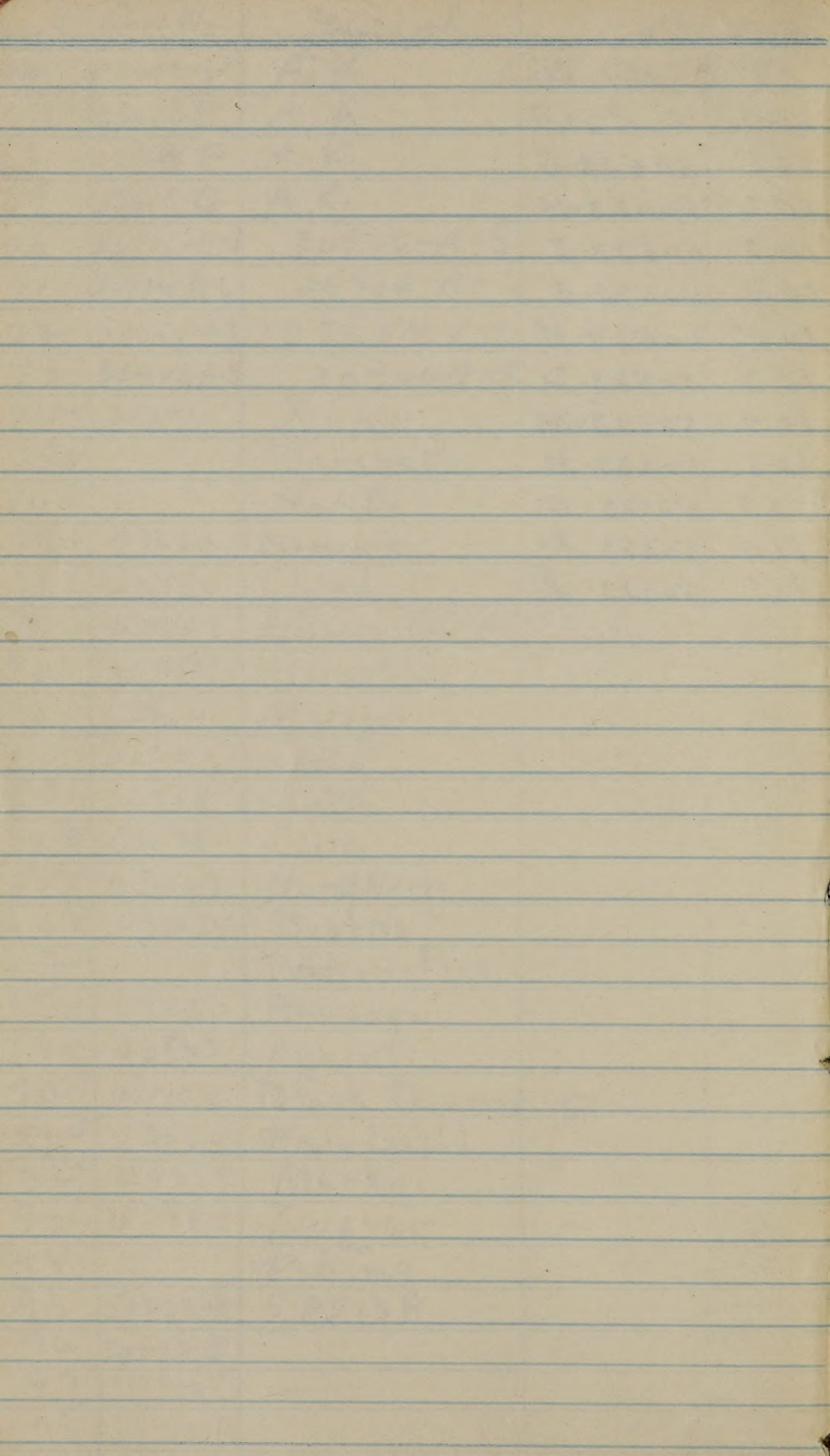
Seeding method-----

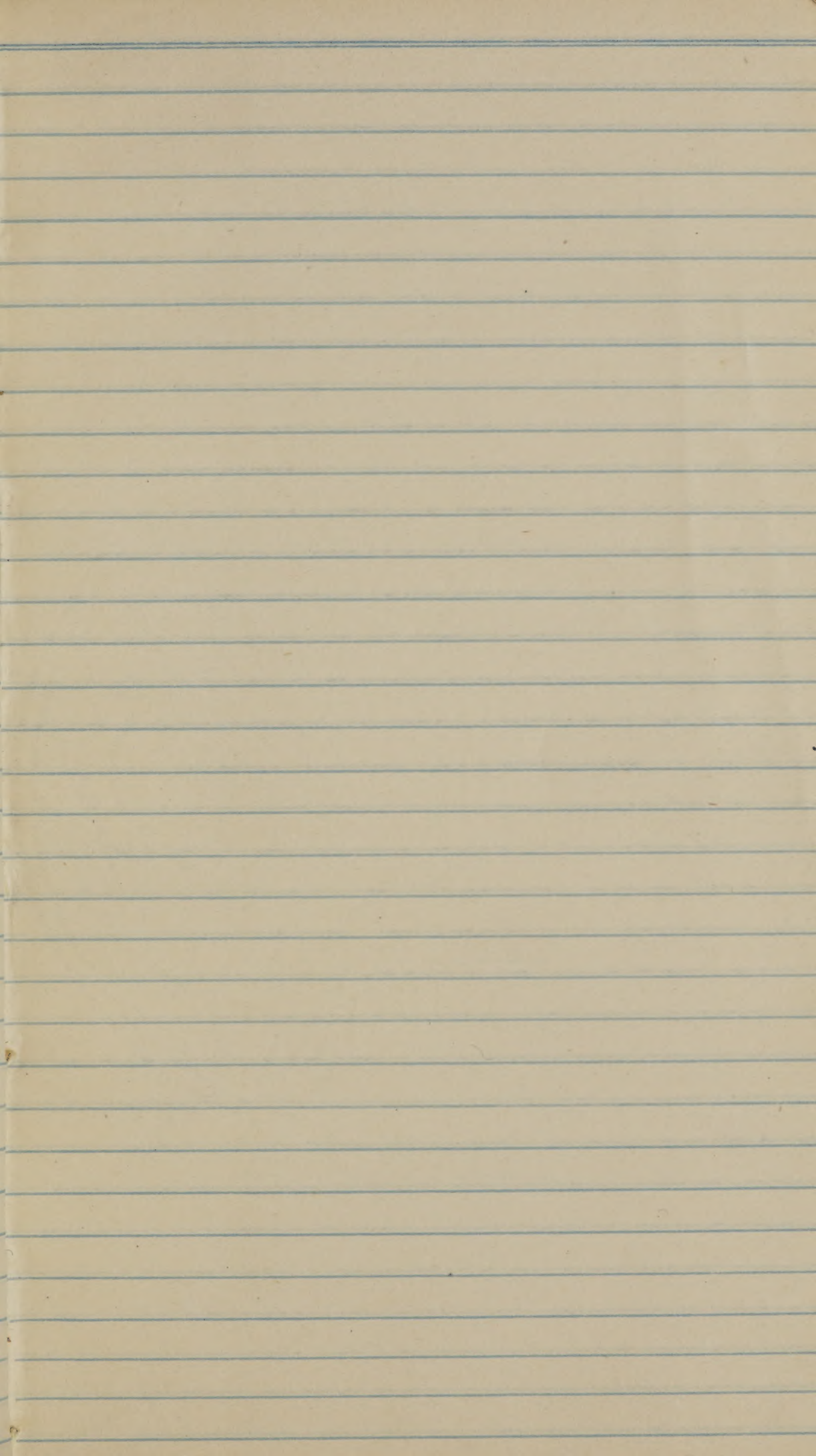
Sample Office		Variety
No.	No.	
1 ✓	03528	Columbia
2 ✓	03730	Mikado
3 ✓		Wisconsin Early Black
4 ✓		Chiquita
5 ✓	03963	A.K.
6 ✓		Black Eyebrow
7 ✓		Aksarben
8 ✓	03858	Ancherst
9 ✓	03649	Mammoth Brown
10 ✓	03794	Chestnut
11 ✓		Easy Cook
12 ✓	03604	Early Brown
13 ✓	036906A-7	036906-A-7 - Selection
14 ✓	03654-16-1	03654-16-1 - "
15 ✓	03654-4-1	03654-4-1 - "
16 ✓	03654-15-2	03654-15-2 - "
17 ✓	03654-I	03654-I - "
18 ✓	03654-C	03654-C - "
19 ✓	03654-17	03654-17 - "
20 ✓	03775 E	Manchu
21 ✓	03775 F	Manchu
22 ✓	03775 A	Manchu
23 ✓	03836 A	Manchu
24 ✓	03836 B	Manchu
25 ✓	03775 C	Manchu
26 ✓	03775 B	Manchu
27 ✓	03654 A	
28		
29 ✓	03619 B	A.K.
30 ✓	03619 C	A.K.
31 ✓	36906 A-1	36906-A-1
32 ✓	36906 A-2	36906-A-2

Sample	No			
33 ✓		36906A-3		
34		36906A-4		
35 ✓		Soy bean cake		
36 ✓		Haberlandt - Oct. 1921		
37 ✓		Zelandarium - " "		
38 ✓		Tobacco " "		
39 ✓	03223	Tarheel Bl. " "		
40 ✓		Hoosier " "		
41 ✓		Virginia " "		
42 ✓		Yokotomura " "		
43 ✓		More " "		
44 ✓	03775D	Manchu " "		
45 ✓	03738B	Bl. eyebrow " "		
46 ✓	03738A	" " " "		
47	03738C	" " " "		
48	03638A	" " " "		
49	03638B	" " " "		
50	03638C	" " " "		
51	03638D	" " " "		
52	03638E	" " " "		
53	03601A	" " " "		
54	03601B	" " " "		
55	03601C	" " " "		
56	03947-A	" " " "		
57	03947-B	" " " "		
58	03947-C	" " " "		
59	03947-D	" " " "		
60	03947-E	" " " "		
61	03947-F	" " " "		
62	03547-A	" " " "		
63	50524-B	" " " "		
64	50524-A	" " " "		
65	03619A	A.K	" "	

Sample	Office No.	Variety		
66	03619-D	A.K.	Arlington	1521
67	03619 E	A.K.	"	"
68	03619 F	A.K.	"	"
69	03619 G	A.K.	"	"
70	36906-A-5	36906-A-5	"	"
71	36906-A-6	36906-A-6	"	"
72	03654-H	03654-I-1	"	"
73	36906-A-8	36906-A-8	"	"
74 ✓	28050	Pinkie	"	"
75 ✓		Barchett		
76 ✓		Hat To		
77 ✓	03630	Brownie		
78	03550	Clowd		
79	03957	Allison Black		
80	03557	Arlington		
81	03813	Mongol		
82	03745	Sooty		
83	03704	Okete		
84 ✓	03575	Edna		
85 ✓	03627	Hong Kong		
86 ✓	03634	Brooks		
87 ✓		Wilson-Five		
88 ✓	03230	Akasoya		
89 ✓	03863	Ayachi		
90 ✓	02707	Black Champion		
91 ✓	03530	Fairchild		
92 ✓	03589	Merko		
93 ✓	03880	Duggat		
94		Peking		
95	50523-A	50523-A		
96	50523-B			
97	50523-C			
98	50523-D			

Sample	No	Variety
99	50523E	
100	50523F	
101	50523-G	
102	50523-H	
103	50523-I	
104	50523-J	
105	50523-K	
106	50523-L	
107	50523-M	
108	50523-N	
109	50523-O	
110	50523-P	
111	50523-Q	



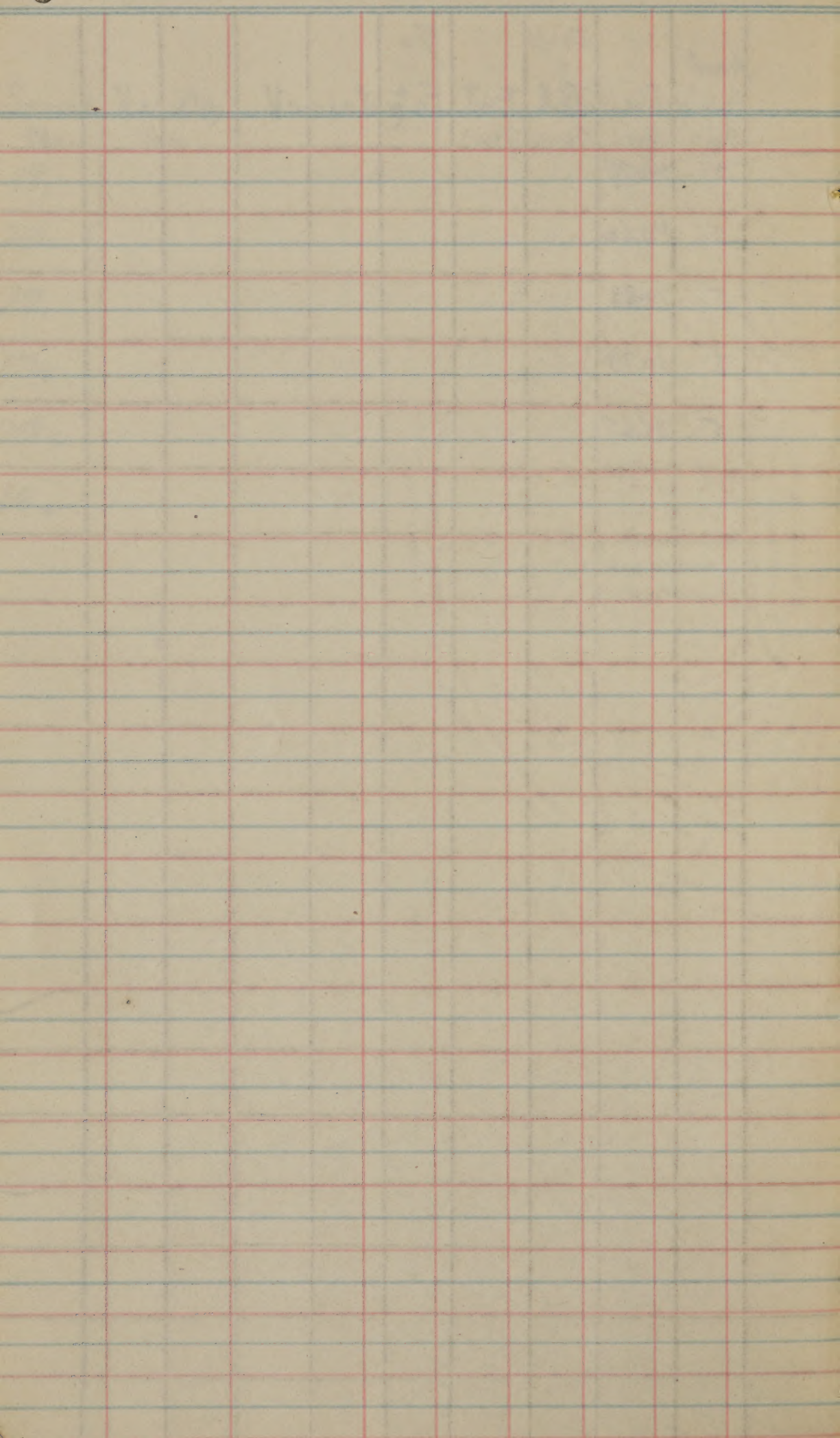


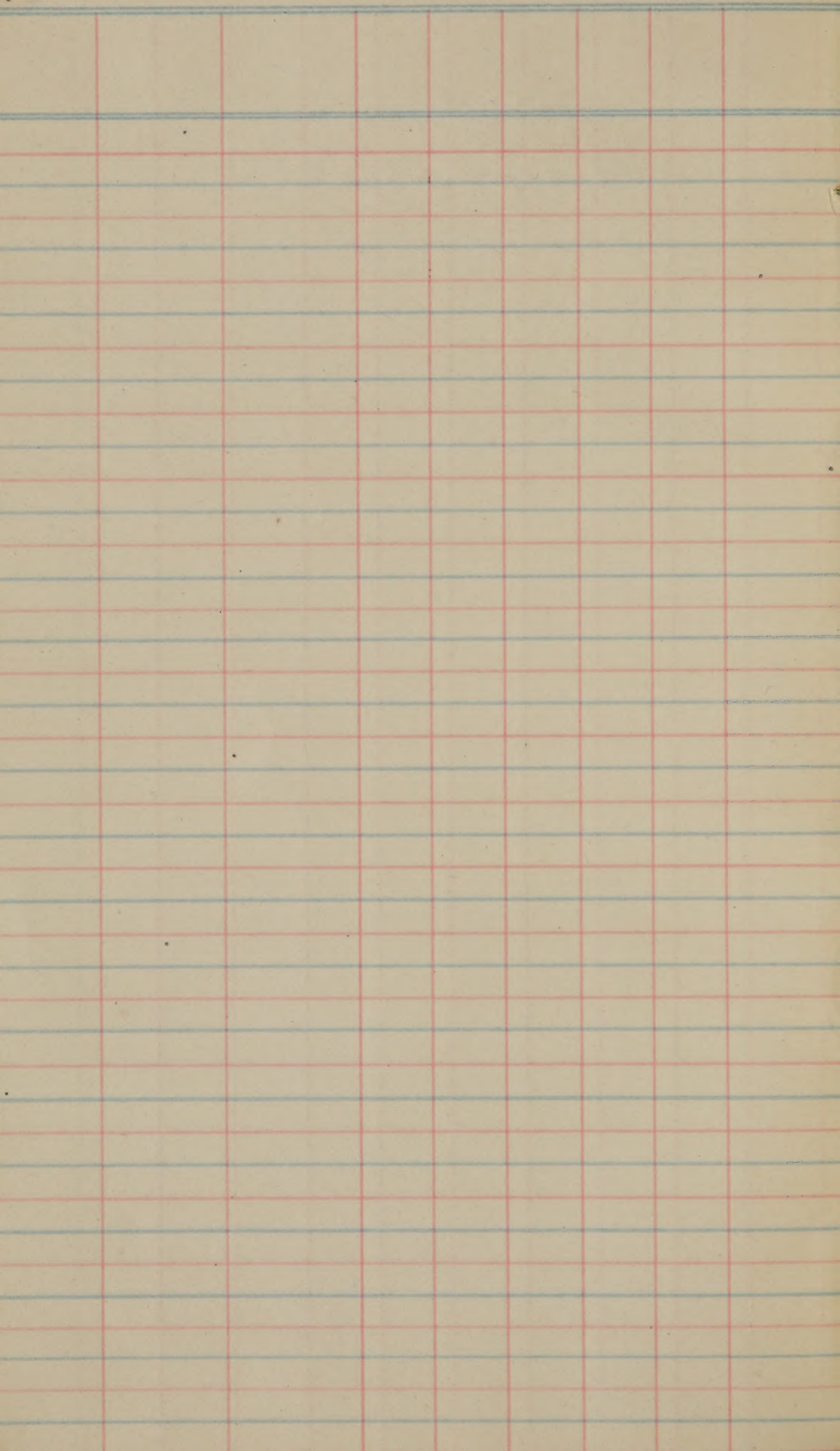
Sample No.	Variety No.	Variety	Source
6 ¹		Black Eyebrow	
6 ²		" "	
6 ³		" "	
6 ⁴		" "	
7 ¹		Aksarben	
7 ²		" "	
7 ³		" "	
7 ⁴		" "	
7 ⁵		" "	
7 ⁶		" "	
8 ¹		Amherst	
8 ²		" "	
8 ³		" "	
8 ⁴		" "	
1 ¹		Columbia	
1 ²		" "	
5 ₁ A		A.K.	
5 ₂ A		" "	
5 ₃ C		Columbia	
5 ₃ B		A.K.	
3 ₁ C		Wisc. Ey. Bl.	
3 ₂ C		" " "	
10 ₁ C		Chestnut	
5 ₄ B		A.K.	
9 ₁ C		Mammoth Br.	
9 ₂ C		" "	
14 ₁		03654-16-1	
14 ₂		" "	
10 ₂ C		Chestnut.	
15 ₁		03654-4-1	
15 ₂		" "	
13 ₁		036906-A-7	
13 ₂		" "	
18 ₁		03654 C	
16 ₁		03654-15-2	
18 ₂		03654 C	
16 ₂		03654-15-2	

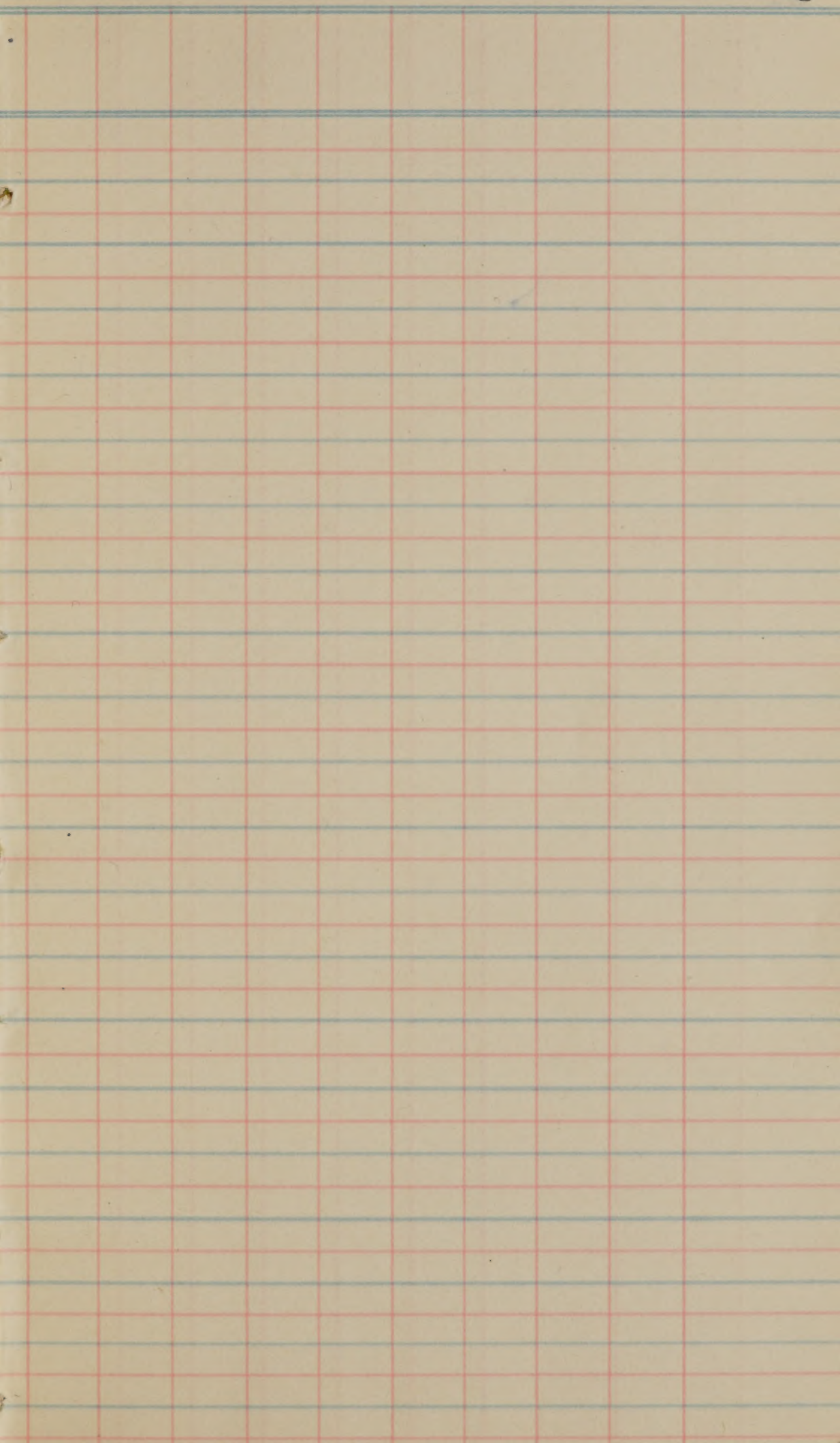
Date	Amt. of meal Gms.	wt. of dish Gms.	Dish & fat Gms.	Wt. of fat Gms.	Per cent fat				
1/6	5	56.9	59.9	1.00	20.0				
1/6	5	73.130	74.12	.99	19.9				
	5								
	5								
1/6	5	67.29	68.19	.90	18.0				
1/6	5	65.53	66.5	.99	19.4				
1/6	5	53.84	54.79	.95	19				
1/6	5	75.15	76.1	.95	19				
1/6	5	56.70	57.63	.93	18.6				
1/6	5	67.410	68.29	.88	17.6				
1/6	5	68.215	69.03	.815	16.3				
1/6	5	68.860	69.71	.85	17.0				
	5	65.260	66.7	.81	16.2				
	5	69.770	70.58	.81	16.2				
1/9	5	53.86	54.81	.95	19.0				
1/9	5	56.70	57.63	.93	18.6				
		68.22	69.17	.95	19.0				
		68.97	69.88	.91	18.2				
		56.9	57.83	.93	18.6				
		67.40	68.36	.96	19.2				
		69.48	70.35	.96	19.4				
		73.13	74.10	.97	19.4				
		75.15	76.04	.89	17.8				
		67.29	68.26	.97	19.4				
		38.78	39.60	.82	16.4				
		38.66	39.49	.83	16.6				
		47.26	48.01	.75	15.2				
		39.26	40.07	.81	16.2				
		38.60	39.54	.94	18.8				
		43.56	44.38	.82	16.4				
		40.88	41.67	.79	15.8				
		40.74	41.55	.81	16.2				
1/11		30.85	31.55	.70	14.				
		38.65							
		39.27							
		38.60							
		30.86							

[illegible]

Amul milk	Dish	Dish + Fat	Fat	% Fat
gms.	gms	gms	gms	
5	40.75			
5	43.56			
5	40.88			
5	30.99			
5	44.65			







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BUREAU OF PLANT INDUSTRY.
FORAGE-CROP INVESTIGATIONS.

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